

WHAT IS CLAIMED IS:

1. A printing control apparatus that communicates with an image forming apparatus connected via a network, comprising:

5 registration means for registering information used in order to enable utilization of the image forming apparatus; and

generating means, responsive to registration of said information by said registration means, for  
10 generating setting information to set a printing-completion notification destination of printing-completion notification means of the image forming apparatus to the printing control apparatus in such a manner that notification of completion of printing can  
15 be received from the image forming apparatus.

2. The apparatus according to claim 1, wherein the information used in order to enable utilization of the image forming apparatus includes information indicative of a printing-completion notification function possessed  
20 by the image forming apparatus;

said generating means generating setting information, which is recognizable by the image forming apparatus for setting the printing-completion notification destination to the printing control  
25 apparatus, on the basis of information indicating the printing-completion notification function possessed by the image forming apparatus.



basis of information indicative of a printing-completion notification function possessed by the image forming apparatus, whether the image forming apparatus has a printing-completion notification function;

5        wherein the result of the determination by said determination means is transmitted to the information processing apparatus.

7. The apparatus according to claim 6, wherein said determination means determines whether a printing-  
10 completion notification destination in the image forming apparatus can be stored in the image forming apparatus, and transmits the result of this determination to the information processing apparatus.

8. The apparatus according to claim 7, wherein if said  
15 determination means determines that the printing-completion notification destination of said image forming apparatus can be stored in the image forming apparatus, an instruction which makes a setting such that the printing-completion notification destination  
20 becomes the printing control apparatus is not generated with respect to print data, and if said determination means determines that the printing-completion notification destination cannot be stored in the image forming apparatus, the information processing apparatus  
25 is notified in such a manner that an instruction which makes a setting such that the printing-completion notification destination becomes the printing control

apparatus is generated with respect to print data.

9. The apparatus according to claim 1, wherein the printing control apparatus is a print server.

10. A printing control method for communicating with an  
5 image forming apparatus connected via a network,  
comprising:

a registration step of registering information used  
in order to enable utilization of the image forming  
apparatus; and

10 a generating step, responsive to registration of  
said information at said registration step, for  
generating setting information to set a printing-  
completion notification destination of a printing-  
completion notification step of the image forming  
15 apparatus to a printing control apparatus in such a  
manner that notification of completion of printing can  
be received from the image forming apparatus.

11. The method according to claim 10, wherein the  
information used in order to enable utilization of the  
20 image forming apparatus includes information indicative  
of a printing-completion notification function possessed  
by the image forming apparatus; and

if information indicating the printing-completion  
notification function possessed by the image forming  
25 apparatus indicates that the image forming apparatus has  
the printing-completion notification function, said  
generating step generates setting information, which is

recognizable by the image forming apparatus for setting the printing-completion notification destination to the printing control apparatus in the image forming apparatus; and

5           if information indicating the printing-completion notification function possessed by the image forming apparatus does not indicate that the image forming apparatus has the printing-completion notification function, said generating step does not generate setting  
10 information, which is recognizable by the image forming apparatus for setting the printing-completion notification destination to the printing control apparatus in the image forming apparatus.

12. The method according to claim 11, further  
15 comprising a transmission control step of controlling transmission of the setting information in order that the printing-completion notification destination of printing-completion notification function of the image forming apparatus will be set to the image forming  
20 apparatus as a network address.

13. The method according to claim 12, wherein the network address is a network address of a print server, and said transmission control step transmits this network address in order that it will be set to the  
25 image forming apparatus.

14. The method according to claim 10, further comprising:

a print-request receiving step of receiving a print request, which does not include print data, from an information processing apparatus connected to the printing control apparatus via the network; and

- 5        a printing-permission notification step of notifying the information processing apparatus of permission to execute printing in accordance with the status of the image forming apparatus;

wherein said information processing apparatus  
10       transmits print data to the image forming apparatus in response to notification of permission to execute printing from said printing control apparatus.

- 15       15. The method according to claim 10, further comprising a determination step of determining, on the basis of information indicative of a printing-completion notification function possessed by the image forming apparatus, whether the image forming apparatus has a printing-completion notification function;

wherein the result of the determination at said  
20       determination step is transmitted to the information processing apparatus.

16. The method according to claim 15, wherein said determination step determines whether a printing-completion notification destination in the image forming  
25       apparatus can be stored in the image forming apparatus, and transmits the result of this determination to the information processing apparatus.

0001042 101901

17. The method according to claim 16, wherein if said determination step determines that the printing-completion notification destination in said image forming apparatus can be stored in the image forming apparatus, an instruction which makes a setting such that the printing-completion notification destination becomes the printing control apparatus is not generated with respect to print data, and if said determination step determines that the printing-completion notification destination cannot be stored in the image forming apparatus, the information processing apparatus is notified in such a manner that an instruction which makes a setting such that the printing-completion notification destination becomes the printing control apparatus is generated with respect to print data.

18. The method according to claim 10, wherein this method is used in a print server.

19. A control program executed in a printing control apparatus that communicates with an image forming apparatus connected via a network, comprising:

a registration step of registering information used in order to enable utilization of the image forming apparatus; and

a generating step, responsive to registration of said information at said registration step, for generating setting information to set a printing-completion notification destination of a printing-

completion notification step of the image forming apparatus to the printing control apparatus in such a manner that notification of completion of printing can be received from the image forming apparatus.

5 20. The control program according to claim 19, wherein the information used in order to enable utilization of the image forming apparatus includes information indicative of a printing-completion notification function possessed by the image forming apparatus;

10 said generating step generating setting information, which is recognizable by the image forming apparatus for setting the printing-completion notification destination to the printing control apparatus, on the basis of information indicating the  
15 printing-completion notification function possessed by the image forming apparatus.

21. The control program according to claim 20, further comprising a transmission control step of controlling transmission of the setting information in order that  
20 the printing-completion notification destination of printing-completion notification function of the image forming apparatus will be set to the image forming apparatus as a network address.

22. The control program according to claim 21, wherein  
25 the network address is a network address of a print server, and said transmission control step transmits this network address in order that it will be set to the



image forming apparatus.

23. The control program set forth in claim 19 wherein the following steps are executed in the printing control apparatus:

5           a print-request receiving step of receiving a print request, which does not include print data, from an information processing apparatus connected to the printing control apparatus via the network; and

10           a printing-permission notification step of notifying the information processing apparatus of permission to execute printing in accordance with the status of the image forming apparatus;

15           wherein said information processing apparatus transmits print data to the image forming apparatus in response to notification of permission to execute printing from said information processing apparatus.

24. The control program set forth in claim 19 wherein the following steps are further executed in the printing control apparatus:

20           a determination step of determining, on the basis of information indicative of a printing-completion notification function possessed by the image forming apparatus, whether the image forming apparatus has a printing-completion notification function; and

25           a step of transmitting result of the determination at said determination step is transmitted to the information processing apparatus.

25. The control program according to claim 15, wherein said determination step determines whether a printing-completion notification destination in the image forming apparatus can be stored in the image forming apparatus, and causes the printing control apparatus to transmit the result of this determination to the information processing apparatus.

26. The control program according to claim 25, wherein if said determination step determines that the printing-completion notification destination in said image forming apparatus can be stored in the image forming apparatus, an instruction which makes a setting such that the printing-completion notification destination becomes the printing control apparatus is not generated with respect to print data, and if said determination step determines that the printing-completion notification destination cannot be stored in the image forming apparatus, the printing control apparatus is caused to notify the information processing apparatus that an instruction which makes a setting such that the printing-completion notification destination becomes the printing control apparatus is generated with respect to print data.

27. The control program according to claim 19, wherein this control program is executed in a print server.

28. A printing control apparatus that communicates with an image forming apparatus connected via a network,

comprising:

determination means for determining whether the image forming apparatus has a printing-completion notification function; and

- 5 management means for managing status of print processing by receiving notification of completion of printing, which is transmitted by the image forming apparatus, if said determination means has determined that the image forming apparatus has the printing-
- 10 completion notification function, and by requesting and receiving status of print processing from the image forming apparatus if said determination means has determined that the image forming apparatus does not have the printing-completion notification function.
- 15 29. The apparatus according to claim 28, wherein said determination means determines whether the image forming apparatus has the printing-completion notification function based upon information, which is received from the image forming apparatus, indicative of the printing-
- 20 completion notification function possessed by the image forming apparatus.
30. The apparatus according to claim 28, wherein sequence management of a print request that enters from an information processing apparatus via a network
- 25 interface is performed.
31. The apparatus according to claim 28, wherein the status of print processing is managed using job

information.

32. A printing control method used in a printing control apparatus that communicates with an image forming apparatus, comprising:

- 5       a determination step of determining whether the image forming apparatus has a printing-completion notification function; and

- a management step of managing status of print processing by receiving notification of completion of  
10       printing, which is transmitted by the image forming apparatus, if said determination step has determined that the image forming apparatus has the printing-completion notification function, and by requesting and receiving status of print processing from the image  
15       forming apparatus if said determination step has determined that the image forming apparatus does not have the printing-completion notification function.

33. The method according to claim 32, wherein said  
20       determination step determines whether the image forming apparatus has the printing-completion notification function based upon information, which is received from the image forming apparatus, indicative of the printing-completion notification function possessed by the image forming apparatus.

- 25       34. The method according to claim 32, wherein sequence management of a print request that enters from an information processing apparatus via a network interface

is performed.

35. The method according to claim 28, wherein the status of print processing is managed using job information.

- 5 36. A control program executed in a printing control apparatus that communicates with an image forming apparatus via a network, comprising:

a determination step of determining whether the image forming apparatus has a printing-completion

- 10 notification function; and

a management step of managing status of print processing by receiving notification of completion of printing, which is transmitted by the image forming apparatus, if said determination step has determined  
15 that the image forming apparatus has the printing-completion notification function, and by requesting and receiving status of print processing from the image forming apparatus if said determination step has determined that the image forming apparatus does not  
20 have the printing-completion notification function.

37. The control program according to claim 36, wherein at said determination step, the printing control apparatus is caused to execute the step of determining whether the image forming apparatus has the printing-completion notification function based upon information,  
25 which is received from the image forming apparatus, indicative of the printing-completion notification

function possessed by the image forming apparatus.

38. The control program according to claim 36, wherein the printing control apparatus is caused to perform sequence management of a print request that enters from an information processing apparatus via a network interface.

39. The control program according to claim 36, wherein the printing control apparatus is caused to manage status of print processing using job information.

40. An information processing apparatus for communicating with a printing control apparatus via a network and transmitting print data to an image forming apparatus, comprising:

acquisition means for acquiring device information of the image forming apparatus; and

instruction add-on/revision means for adding on or revising, on the basis of the device information, a destination to be notified of completion of printing of the print data by the image forming apparatus.

41. The apparatus according to claim 40, further comprising determination means for determining whether a printing-completion notification destination has already been set for the print data;

wherein if a printing-completion notification destination has already been set for the print data, said instruction add-on/revision means revises the setting with regard to the print data in such a manner

42. The apparatus according to claim 41, wherein  
whether or not a printing-completion notification  
10 destination has already been set for the print data is  
judged by whether or not the image forming apparatus has  
storage means for storing the printing-completion  
notification destination.

43. The apparatus according to claim 40, wherein a  
15 printing-completion notification destination regarding  
the print data is set by a print control instruction.

44. The apparatus according to claim 40, wherein the type of print control instruction that can be recognized by the image forming apparatus is judged from information indicative of a printing-completion notification function possessed by the printing control apparatus, and a print control instruction is added on or revised in such a manner that the printing-completion notification destination becomes the printing control apparatus.

45. The apparatus according to claim 40, wherein the printing control apparatus sets job information with

regard to a print job so that the printing control  
apparatus can identify the print job and, if  
notification of completion of printing by the image  
forming apparatus is acquired, acquires the job  
5 information as well.

46. The apparatus according to claim 40, further  
comprising receiving means for receiving information  
indicative of a printing-completion notification  
function of the image forming apparatus;

10 wherein the information processing apparatus is set  
in such a manner that if information indicative of a  
printing-completion notification function received by  
said receiving means indicates that printing-completion  
notification destination of the image forming apparatus  
15 can be stored within the image forming apparatus, an  
instruction which makes a setting such that the  
printing-completion notification destination becomes the  
printing control apparatus is not generated with respect  
to print data, and if the information indicative of the  
20 printing-completion notification function indicates that  
the printing-completion notification destination of the  
image forming apparatus cannot be stored within the  
image forming apparatus, an instruction which makes a  
setting such that the printing-completion notification  
25 destination becomes the printing control apparatus is  
generated with respect to the print data.

47. A method in an information processing apparatus for



communicating with a printing control apparatus via a network and transmitting print data to an image forming apparatus, comprising:

an acquisition step of acquiring device information  
5 of the image forming apparatus; and

an instruction add-on/revision step of adding on or revising, on the basis of the device information, a destination to be notified of completion of printing of the print data by the image forming apparatus.

10 48. The method according to claim 47, further comprising a determination step of determining whether a printing-completion notification destination has already been set for the print data;

wherein if a printing-completion notification  
15 destination has already been set for the print data, said instruction add-on/revision step revises or adds on a setting with regard to the print data in such a manner that the printing-completion notification destination that has been set with regard to the print data becomes  
20 the printing control apparatus, and if a printing-completion notification destination has not already been set for the print data, said instruction add-on/revision step sets a printing-completion notification destination for the print data.

25 49. The method according to claim 48, wherein whether or not a printing-completion notification destination has already been set for the print data is judged by

whether or not the image forming apparatus has storage means for storing the printing-completion notification destination.

50. The method according to claim 47, wherein a
- 5 printing-completion notification destination regarding the print data is set by a print control instruction.
51. The method according to claim 47, wherein the type of print control instruction that can be recognized by the image forming apparatus is judged from information
- 10 indicative of a printing-completion notification function possessed by the printing control apparatus, and a print control instruction is revised in such a manner that the printing-completion notification destination becomes the printing control apparatus.
- 15 52. The method according to claim 47, wherein job information by which the printing control apparatus identifies a print job is set with regard to the print job, and if notification of completion of printing by the image forming apparatus is acquired, the job
- 20 information is acquired as well.
53. The method according to claim 47, further comprising:
- a receiving step of receiving information indicative of a printing-completion notification
- 25 function of the image forming apparatus; and
- a step of setting the information processing apparatus in such a manner that if information

indicative of a printing-completion notification  
function received at said receiving step indicates that  
printing-completion notification destination of the  
image forming apparatus can be stored within the image  
5 forming apparatus, an instruction which makes a setting  
such that the printing-completion notification  
destination becomes the printing control apparatus is  
not generated with respect to print data, and if the  
information indicative of the printing-completion  
10 notification function indicates that the printing-  
completion notification destination of the image forming  
apparatus cannot be stored within the image forming  
apparatus, an instruction which makes a setting such  
that the printing-completion notification destination  
15 becomes the printing control apparatus is generated with  
respect to the print data.

54. A control program executed in an information  
processing apparatus for communicating with a printing  
control apparatus via a network and transmitting print  
20 data to an image forming apparatus, comprising:

an acquisition step of acquiring device information  
of the image forming apparatus; and

an instruction add-on/revision step of adding on or  
revising, on the basis of the device information, a  
25 destination to be notified of completion of printing of  
the print data by the image forming apparatus.

55. The control program according to claim 54, further

comprising a determination step of determining whether a printing-completion notification destination has already been set for the print data;

wherein said instruction add-on/revision step

- 5 causes the information processing apparatus to further execute a step wherein if a printing-completion notification destination has already been set for the print data, a setting with regard to the print data is revised in such a manner that the printing-completion notification destination that has been set with regard to the print data becomes the printing control apparatus, and if a printing-completion notification destination has not already been set for the print data, a printing-completion notification destination is set
- 10 for the print data.
- 15

56. The control program according to claim 55, wherein the information processing apparatus is caused to make a judgment such that whether or not a printing-completion notification destination has already been set for the print data is judged by whether or not the image forming apparatus has storage means for storing the printing-completion notification destination.
- 20

57. The control program according to claim 54, wherein the information processing apparatus is caused to set a printing-completion notification destination regarding the print data by a print control instruction.
- 25

58. The control program according to claim 54, wherein

the information processing apparatus is caused to judge the type of print control instruction that can be recognized by the image forming apparatus from information indicative of a printing-completion

5 notification function possessed by the printing control apparatus, and to revise a print control instruction in such a manner that the printing-completion notification destination becomes the printing control apparatus.

59. The control program according to claim 54, wherein  
10 the information processing apparatus is caused to set job information, by which the printing control apparatus identifies a print job, with regard to the print job, and if notification of completion of printing by the image forming apparatus is acquired, to acquire the job  
15 information as well.

60. The control program according to claim 54, further comprising a receiving step of receiving information indicative of a printing-completion notification function of the image forming apparatus;

20 wherein the information processing apparatus is caused to execute a further step of setting the information processing apparatus in such a manner that if information indicative of a printing-completion notification function received at said receiving step  
25 indicates that printing-completion notification destination of the image forming apparatus can be stored within the image forming apparatus, an instruction which

makes a setting such that the printing-completion notification destination becomes the printing control apparatus is not generated with respect to print data, and if the information indicative of the printing-

- 5 completion notification function indicates that the printing-completion notification destination of the image forming apparatus cannot be stored within the image forming apparatus, an instruction which makes a setting such that the printing-completion notification  
10 destination becomes the printing control apparatus is generated with respect to the print data.

61. A printing system which includes an image forming apparatus and a printing control apparatus connected via a network, said printing control apparatus comprising:

- 15 registration means for registering information used in order to enable utilization of the image forming apparatus;

generating means, responsive to registration of said information by said registration means, for

- 20 generating setting information to set a printing-completion notification destination of printing-completion notification means of the image forming apparatus to the printing control apparatus in such a manner that notification of completion of printing can  
25 be received from the image forming apparatus; and

transmitting means for transmitting the setting information to the image forming apparatus;

wherein said image forming apparatus receives the setting information from said printing control apparatus and sets a printing-completion notification destination when printing by said image forming apparatus is completed.

62. A printing system which includes an information processing apparatus, an image forming apparatus and a printing control apparatus connected via a network, said printing control apparatus comprising:

determination means for determining whether the image forming apparatus has a printing-completion notification function;

management means for managing status of print processing of said image forming apparatus in response to notification of completion of printing transmitted by said image forming apparatus if said determination means has determined that said image forming apparatus has the printing-completion notification function, and managing status of print processing by said image forming apparatus if said determination means has determined that said image forming apparatus does not have the printing-completion notification function; and

management-result notification means for notifying said information processing apparatus of result of management by said management means;

said information processing apparatus transmitting print data to said image forming apparatus on the basis

of result of management of which notification has been given by said printing control apparatus.

63. A printing system which includes a printing control apparatus and an information processing apparatus, which  
5 is for transmitting print data to an image forming apparatus, connected to said printing control apparatus via a network, said information processing apparatus comprising:

acquisition means for acquiring device information  
10 of the image forming apparatus; and

instruction add-on/revision means for adding on or revising, on the basis of the device information, a destination to be notified of completion of printing of the print data by said image forming apparatus;

15 said printing control apparatus transmitting the device information of said image forming apparatus to said information processing apparatus in response to a request for the device information from said information processing apparatus.